



261588

# GROFF

TESTING CORPORATION

FOUNDATION BORINGS AND TESTS  
CONCRETE, STEEL, AND WOOD  
AND SOIL INVESTIGATIONS

June 9, 1983

Paxton Landfill Corporation  
12201 South Oglesby  
Chicago, Illinois 60633

RE: Soil Investigation  
Paxton Landfill Addition  
116th. & Paxton  
Chicago, Illinois

Gentlemen:

Enclosed are copies of our boring logs for the subsurface investigation performed for the above referenced project.

Five soil borings were made for this investigation which were located in a previous landfill dump site situated east of the present active landfill site. As understood, the purpose of the borings was to determine the depth of the existing refuse material, then extend the borings into the natural soil to a minimum depth of 30 feet below the buried refuse using split spoon continuous sampling procedures to collect samples for laboratory testing. Also shelly tube samples were taken in each unconsolidated material type encountered.

The bore hole was advanced by means of hollow-stem augers. The existing trash material was occasionally sampled to verify if natural soil had been reached. Once contact had been made with the natural soil, split spoon samples and shelly tubes were taken. At this point the boring were stopped for fear that continuing the drilling may contaminate the underlying soils with the contaminated water in the trash material. Before retracting the entire string of augers, several feet was retracted then a bentonite slurry was pumped to the bottom of the bore hole in order to provide a seal in the penetrated natural soil. This procedure was followed in all the bore holes.

In boring no. 2G, after the depth of trash had been determined and augers retracted, the bore hole was located with offset stakes and distances recorded. A backhoe then removed the existing trash to the level determined in the boring of about 17 feet, and then replaced it with clay fill soil to the original ground surface elevation that was taken earlier. The bore hole was relocated and the drill rig reset over the hole. Sampling was then begun at the next continuous sampling interval at the 21 to 22.5 foot level and continued to a depth of 80 feet. The bore hole was again sealed with a bentonite clay slurry mixture. This completed the subsurface investigation.

Respectfully submitted,

GROFF TESTING CORPORATION

By *Ronald R. Groff*

Ronald R. Groff

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JUN 13 1984

EPA - DLP  
STATE OF ILLINOIS

# GROFF

## TESTING CORPORATION

Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-1G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

### DRILLING and SAMPLING INFORMATION

Date Started 5-25-83 Hammer Wt 140 lbs  
 Date Completed 5-25-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathsack Rock Core Dia    in  
 Boring Method HSA Shelby Tube O.D. 3 in

### TEST DATA

SOIL CLASSIFICATION	STRATUM DEPTH	DEPTH SCALE	SAMPLE NO	SAMPLE TYPE	% RECOVERY	GROUND WATER	TEST DATA
						<input type="checkbox"/> NATURAL DRY DENSITY LBS SQ FT 90 100 110 120 130	
						<input type="checkbox"/> UNCONFINED COMPRESSIVE STRENGTH TONS FT <sup>2</sup> 1 2 3 4 5	
						<input checked="" type="checkbox"/> WATER CONTENT % 10 20 30 40 50 LIQUID LIMIT % X PLASTIC LIMIT %	
						<input checked="" type="checkbox"/> STANDARD PENETRATION BLOWS FT 10 20 30 40 50	
Hard gray SILTY CLAY. (FILL)	2.0		1	SS			
Misc. TRASH.							
		5					
		10					
		15	2	SS			
		20					
		25					
		30					
		35	3	SS			
		39.0					
Dense gray non-plastic very moist SILT, tr. clay (ML)	40		4	SS			
	43.0						
Gray low plastic SILTY CLAY lit-some sand, tr. gr. (CL)	45		5	ST			
	47.0						
End of Boring at 47.0'		50					

#### SAMPLER TYPE

SS - DRIVEN SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

#### GROUND WATER DEPTH

▽ AT COMPLETION 7.41 FT. (6.71)  
 ▽ AFTER    HRS.    FT.  
 WATER ON RODS    FT

Elev. (6.71)

#### BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

# GROFF

## TESTING CORPORATION

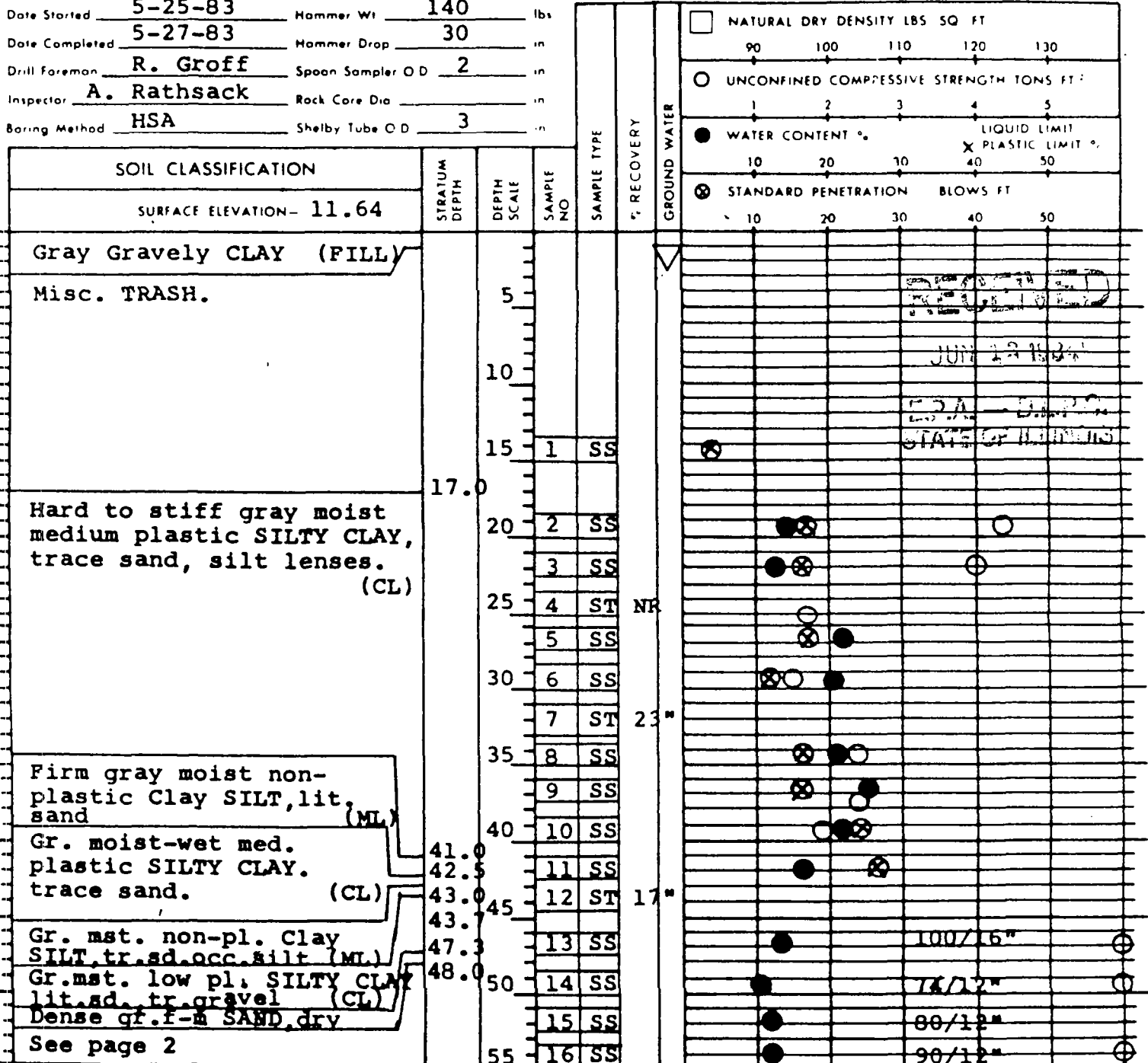
Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-2G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

### DRILLING and SAMPLING INFORMATION

Date Started 5-25-83 Hammer Wt 140 lbs  
 Date Completed 5-27-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathsack Rock Core Dia        in  
 Boring Method HSA Shelby Tube O.D. 3 in

### TEST DATA



### SAMPLER TYPE

SS - DRIVEN SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

### GROUND WATER DEPTH

Elev. 9.24  
 AT COMPLETION 2.40 FT.  
 AFTER        MRS.        FT.  
 WATER ON RODS        FT

### BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

# GROFF

## TESTING CORPORATION

Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-2G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

### DRILLING and SAMPLING INFORMATION

Date Started 5-25-83 Hammer Wt 140 lbs  
 Date Completed 5-27-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathsack Rock Core Dia     in  
 Boring Method HSA Shelby Tube O.D. 3 in

### TEST DATA

SOIL CLASSIFICATION	STRATUM DEPTH	DEPTH SCALE	SAMPLE NO	SAMPLE TYPE	% RECOVERY	GROUND WATER	<input type="checkbox"/> NATURAL DRY DENSITY LBS SQ FT 90 100 110 120 130 <input type="checkbox"/> UNCONFINED COMPRESSIVE STRENGTH TONS FT <sup>2</sup> 1 2 3 4 5 <input checked="" type="checkbox"/> WATER CONTENT % 10 20 30 40 50 LIQUID LIMIT X PLASTIC LIMIT % <input checked="" type="checkbox"/> STANDARD PENETRATION BLOWS FT 10 20 30 40 50
Cont'd. from 1 of 2		55					
Very hard gray low-plastic moist SILTY CLAY, lit. sand, trace gravel. (CL)	61.0	60	17	SS			72/12" ⊕
			18	SS			57/12" ⊕
Very hard gray med-plastic moist SILTY CLAY, tr. sd. (CL)	65		19	SS			69/12" ⊕
Dse.gr.Clayey f-c SAND.mst.	66.0		20	ST	20"		
V.hard gr. med.pl. SILTY CLAY, lit.sd., tr.gr.mst. (CL)	66.5		21	SS			100/12" ⊕
	71.0	70	22	SS			69/12" ⊕
V.dse. gr.low-pl. moist Clay SILT, tr.sd. (ML)	73.0		23	SS			80/12" ⊕
		75	24	SS			57/12" ⊕
Very hard gray low-plastic sl.mst. SILTY CLAY, lit. sand. (CL)	80	80	25	SS			95/12" ⊕
			26	SS			64/12" ⊕
End of Boring at 80.0'							

#### SAMPLER TYPE

SS - DRIVEN SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

#### GROUND WATER DEPTH

▽ AT COMPLETION 2.40 FT. (9.24)  
 ▽ AFTER     HRS     FT.  
 WATER ON RODS     FT

Elev.

#### BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

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## TESTING CORPORATION

Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-3G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

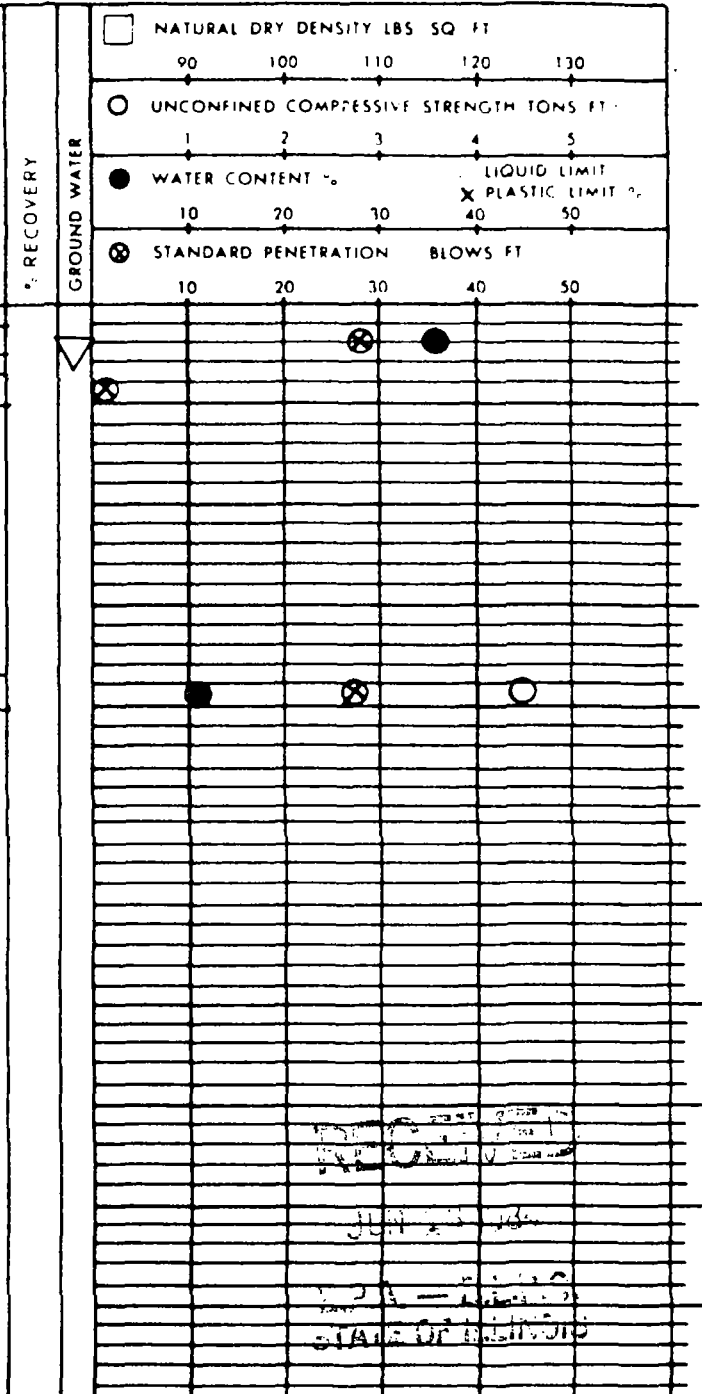
### DRILLING and SAMPLING INFORMATION

Date Started 5-26-83 Hammer Wt 140 lbs  
 Date Completed 5-26-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathsack Rock Core Dia    in  
 Boring Method HSA Shelby Tube C.D. 3 in

### TEST DATA

☐ NATURAL DRY DENSITY LBS SQ FT  
 90 100 110 120 130  
☐ UNCONFINED COMPRESSIVE STRENGTH TONS FT  
 1 2 3 4 5  
☒ WATER CONTENT % LIQUID LIMIT  
 10 20 30 40 50 X PLASTIC LIMIT %  
☒ STANDARD PENETRATION BLOWS FT  
 10 20 30 40 50

SOIL CLASSIFICATION	STRATUM DEPTH	DEPTH SCALE	SAMPLE NO	SAMPLE TYPE
SURFACE ELEVATION- 12.90				
Firm gray moist Clayey SILT. (FILL)	4.0	5	1	SS
Misc. TRASH.			2	SS
	10			
	15			
Hard gray med. plastic moist SILTY CLAY, lit. sand. (CL)	17.5	20	3	SS
End of Boring at 20.0'	20			
	25			



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SAMPLER TYPE  
 SS - DRIVEN SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

GROUND WATER DEPTH  
 AT COMPLETION 3.31 FT (9.59)  
 AFTER    HRS    FT  
 WATER ON RODS    FT

BORING METHOD  
 HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

# GROFF

## TESTING CORPORATION

Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-4G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

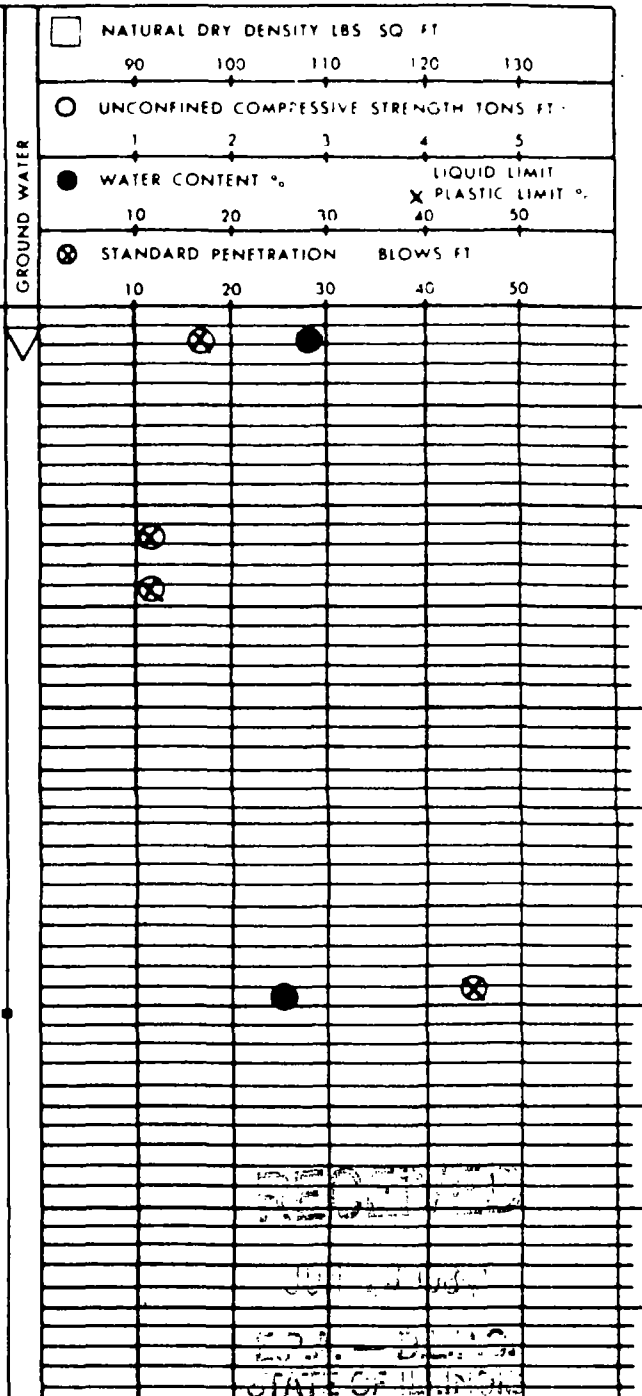
### DRILLING and SAMPLING INFORMATION

Date Started 5-26-83 Hammer Wt 140 lbs  
 Date Completed 5-26-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathack Rock Core Dia    in  
 Boring Method HSA Shelby Tube O.D. 3 in

### TEST DATA

☐ NATURAL DRY DENSITY LBS SQ FT  
 90 100 110 120 130  
☐ UNCONFINED COMPRESSIVE STRENGTH TONS FT.  
 1 2 3 4 5  
☒ WATER CONTENT % LIQUID LIMIT  
 10 20 30 40 50 X PLASTIC LIMIT %  
☒ STANDARD PENETRATION BLOWS FT  
 10 20 30 40 50

SOIL CLASSIFICATION	STRATUM DEPTH	DEPTH SCALE	SAMPLE NO	SAMPLE TYPE	RECOVERY (UN.)
SURFACE ELEVATION- 11.29					
Blk & br. Clay/Cinders(FILL)	2.5		1	SS	
Misc. TRASH		5			
		10			
Clay seams noted @ 12'			2	SS	
		15	3	SS	
		20			
		25			
		30			
Dense gray non-plastic very moist-wet SILT, trace sand. (ML)	39.0		4	SS	
	40.7		5	ST	11
Gray med. plastic wet SILTY CLAY, trace sand & gravel. (CL)	41.0				
End of Boring at 41.0'		45			



SAMPLER TYPE  
 SS -- DRIVEN SPLIT SPOON  
 ST -- PRESSED SHELBY TUBE  
 CA -- CONTINUOUS FLIGHT AUGER  
 RC -- ROCK CORE

GROUND WATER DEPTH  
 AT COMPLETION 3.00 FT  
 AFTER    HRS    FT  
 WATER ON RODS    FT

Elev.  
 (8.29)

BORING METHOD  
 HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

# GROFF

## TESTING CORPORATION

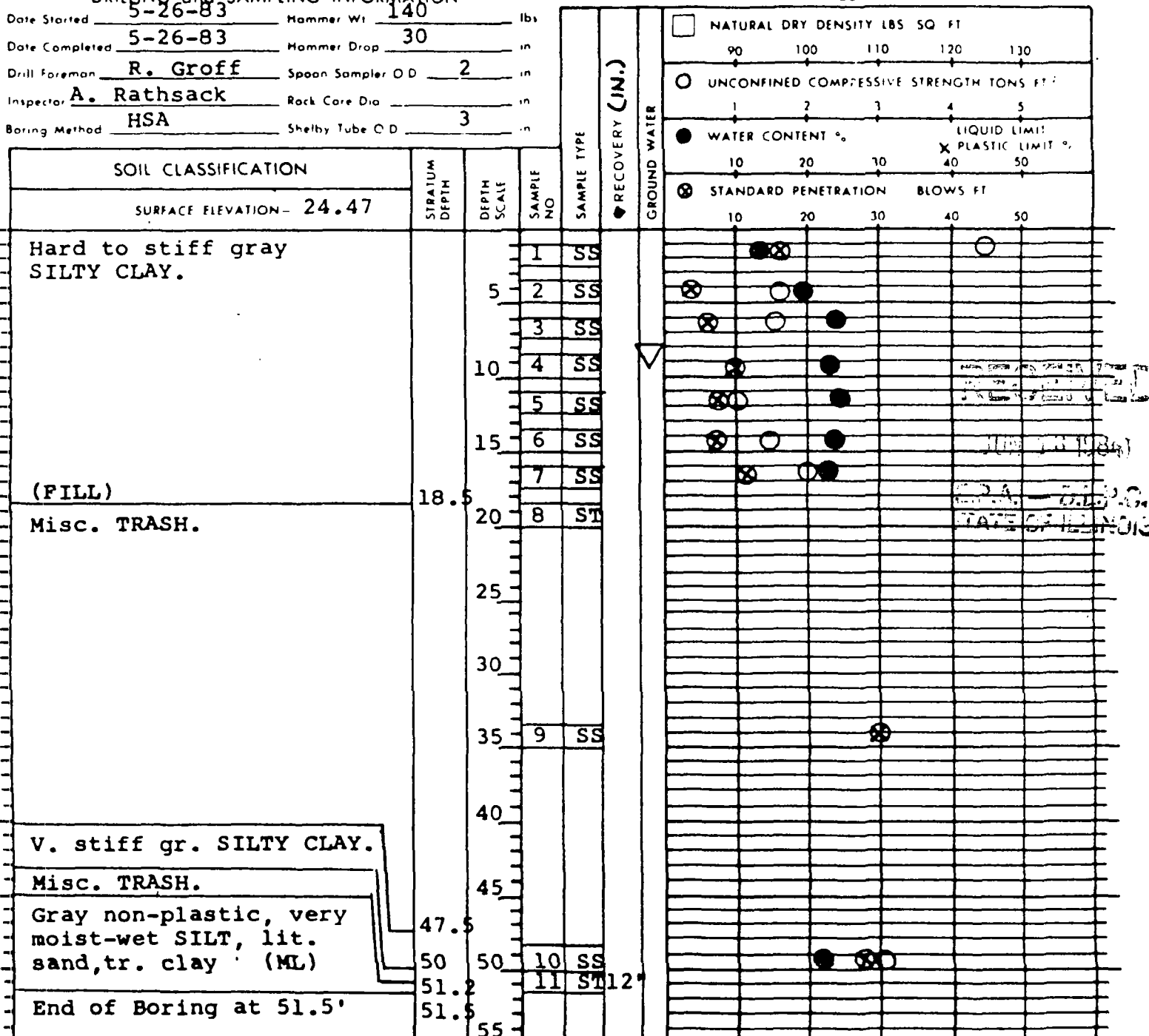
Owner Paxton Landfill Corporation  
 Architect Engineer Andrews Environmental Engineering  
 Project Name Paxton Landfill Corp. Addition  
 Project Location 116th. & Paxton, Chicago, Ill.

Boring # B-5G  
 Job # 1685  
 Drawn By R. Groff  
 Approved By RG

### DRILLING and SAMPLING INFORMATION

Date Started 5-26-83 Hammer Wt 140 lbs  
 Date Completed 5-26-83 Hammer Drop 30 in  
 Drill Foreman R. Groff Spoon Sampler O.D. 2 in  
 Inspector A. Rathsack Rock Core Dia        in  
 Boring Method HSA Shelby Tube O.D. 3 in

### TEST DATA



#### SAMPLER TYPE

SS - DRIVEN SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 CA - CONTINUOUS FLIGHT AUGER  
 RC - ROCK CORE

#### GROUND WATER DEPTH

At Completion 9.29 FT. (15.18)  
 After        MRS        FT.  
 WATER ON RODS        FT.

#### Elev.

#### BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

**SKS** **SHAFFER·KRIMMEL·SILVER**  
& ASSOCIATES, INC. CONSULTING ENGINEERS

2900 N. Broadway • P.O. Box 2233 • Decatur, Illinois, 62526 • 217/877-2100

June 9, 1983

HAROLD S. SHAFFER, PE-SE  
ROBERT G. KRIMMEL, PE-LS  
VAN A. SILVER, PE

SKS #21962

Mr. Andrew Rathsack  
Andrews Environmental Engineering  
1320 South Fifth Street  
Springfield, Illinois 62703

Re: Laboratory Testing  
Paxton Landfill

Dear Mr. Rathsack:

Enclosed are three (3) copies of our report presenting the results of our laboratory tests, conducted on the recently received Shelby-tube samples, from the Paxton Landfill. The cation-exchange capacity results are shown on our tabulation sheet which accompanies the report.


We had some difficulty determining the permeability of the ML soil from Boring 4, Sample 5. We ran an additional sample to confirm the data obtained from the 1st sample. The permeability of this soil will obviously depend on the presence, or lack of silt seams and/or lenses present in the sample tested. The value reported was the average of the 2 samples tested.

One (1) copy of the report is being sent to Groff Testing Corporation as you requested. If there are any questions do not hesitate to contact us.

Very truly yours,

SHAFFER, KRIMMEL, SILVER & ASSOCIATES, INC.

BY:

  
J. William Coberly, Associate

JWC/sal

Enclosures

Copy to: Groff Testing Corporation

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JUN 13 1984

E.P.A. — D.L.P.C.  
STATE OF ILLINOIS

CIVIL ENGINEERS

• GEOTECHNICAL ENGINEERS

• LAND SURVEYORS

CONSTRUCTION QUALITY CONTROL

• MATERIALS TESTING





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& ASSOCIATES, INC. CONSULTING ENGINEERS

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CIVIL ENGINEERS  
GEOTECHNICAL ENGINEERS  
STRUCTURAL ENGINEERS  
LAND SURVEYORS  
CONSTRUCTION QUALITY CONTROL  
MATERIALS TESTING

PROJECT: Paxton Landfill  
Chicago Area, Illinois

DATE: June 9, 1983

CLIENT: Andrews Environmental  
Engineering, Inc.

PROJECT NO. I8-21962-6S

REPORT NO. 21962-9

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LABORATORY TESTING  
PAXTON LANDFILL  
CHICAGO, ILLINOIS

E.P.A. — D.L.P.C.  
STATE OF ILLINOIS

On May 31, 1983, six (6) thin-walled tube samples (Shelby Tubes) were delivered to our Decatur laboratory by a representative of Andrews Environmental Engineering. The 3" O.D. Shelby Tubes were obtained from various soil borings made at the Paxton Landfill, Chicago, Illinois. They were identified by boring number, sample number, and sampling depth.

We were instructed to perform the following tests on portions of the soil extruded from each shelby tube. Those tests were: permeability (hydraulic conductivity), Atterberg limits, as received moisture content, grain-size analysis, and Ion-exchange Capacity. The Ion-exchange capacity was to be conducted by: Teklab; Collinsville, Illinois.

The samples were extruded from the Shelby Tubes and the contents visually examined and classified. The classification was conducted in accordance with ASTM D 2487, Unified Soil Classification System. Some of the samples contained more than one type of soil. After consultation with Andrews Environmental Engineering, Inc. the soil type was selected upon which the tests would be conducted.

A portion of each soil type to be tested was prepared for each specific test. The soil was dried and reduced/pulverized such that it would pass the No. 40 sieve. Approximately 200g., of each sample, was sealed in jars and shipped to Teklab for determination of the



Cation-Exchange Capacity.

The permeability (hydraulic conductivity) was determined from a portion of the sample, which was mechanically reduced to a size suitable for the test. The permeability was measured using a 20 psi confining pressure and a 15 psi constant head pressure. The samples were orientated such that the flow was from top to bottom, as sampled in the field.

The test results are presented on the attached sheets titled, "Soil Classification and Engineering Properties", Sheets 1 & 2. The sample descriptions and classification are presented below.

<u>SAMPLE</u>		<u>Depth</u> <u>(ft.)</u>	<u>DESCRIPTION</u>	<u>USCS</u> <u>CLASSIFICATION</u>
<u>Boring</u> <u>No.</u>	<u>Sample</u> <u>No.</u>			
1	5	45'-47' (19" Re-covered)	Gray, moist, low plasticity silty clay, some sand, trace of gravel	CL
2	7	31'-33' (23" Re-covered)	Gray, moist, medium plasticity silty clay, trace of sand, occ. silt lenses	CL
2	12	42.5'-44.5' (17" Re-covered)	Top 6"-Gray, very moist to wet, medium plasticity silty clay, trace of sand	CL
- Tested Top 6"-			Mid 8"-Gray, moist, low plasticity clayey silt, occ. silt seam, trace of sand	ML
			Bot. 3"-Gray, moist, low plasticity silty clay, little sand, trace of gravel	CL
2	20	63.5'-65.5' (20" Re-covered)	Gray, moist, medium plasticity silty clay, trace of sand, occ. silt lenses	CL
4	5	40'-41' (11" Re-covered)	Top 8"-Gray, very moist to wet, non plastic silt, trace of sand	ML
- Tested Top 8"-			Bot. 3"-Gray, wet, medium plasticity silty clay, trace of sand & gravel	

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STATE OF ILLINOIS



ASSOCIATES

CONSULTING ENGINEERS

<u>SAMPLE</u>				<u>USCS</u>
<u>Boring</u> <u>No.</u>	<u>Sample</u> <u>No.</u>	<u>Depth</u> <u>(ft.)</u>	<u>DESCRIPTION</u>	<u>CLASSIFICATION</u>
5	11	50'-51.2' (12" Re- covered)	Top 8"-Trash and some silty clay	--
-Tested Bottom 4"-			Bot. 4"-Gray, very moist to wet, non plastic silt, little sand, trace of clay	ML

All testing, except as described for permeability determinations, was conducted in accordance with the applicable ASTM standard. A chart depicting the Unified Soil Classification System is attached at the end of the report.

SHAFFER, KRIMMEL, SILVER & ASSOCIATES, INC.

BY:

*J. William Coberly*

J. William Coberly, Associate

JWC/sal

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E.P.A. — D.L.P.C.  
STATE OF ILLINOIS



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CONSULTING ENGINEERS

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PROJECT: Paxton Landfill  
 Chicago, Illinois

JOB NO. 18-21962-6S

DATE: June 9, 1983

CLIENT: Andrews Environmental Engineering

Sheet 1

BORING/SAMPLE NO'S.	1/5	2/7	2/12	2/20	4/5
DEPTH/ELEVATION	45'-47'	31'-33'	42.5'-44.5'	63.5'-65.5'	40'-41'

SOIL PARTICLE SIZES

GRAVEL; %	3		2	3	
SAND; %	30	8	7	7	1
coarse %	2	1		1	
medium %	13	3	2	2	
fine %	15	4	5	4	1
FINES; %	67	92	91	90	99
silt %	48	49	45	54	94
clay (0.002 mm) %	19	43	46	36	5

PLASTICITY CHARACTERISTICS

MOISTURE CONTENT %	14	22	29	16	24
LIQUID LIMIT	27	40	40	35	
PLASTIC LIMIT	17	19	18	17	
PLASTICITY INDEX	10	21	22	18	Non-plastic

CLASSIFICATION

USCS	CL <sub>1</sub>	CL <sub>m</sub>	CL <sub>m</sub>	CL <sub>m</sub>	ML
USDA/ASHTO					

ENGINEERING PROPERTIES

MAX. DRY DENSITY; pcf					JUN 15 1984
OPT. MOISTURE CONTENT; %					EPA - D.L.P.C.
CATION-EXCHANGE CAPACITY meq./100g.	14.8	22.8	20.3	22.5	STATE OF ILLINOIS
PERMEABILITY, cm/sec	$2.4 \times 10^{-8}$	$1.3 \times 10^{-9}$	$1.7 \times 10^{-8}$	$5.4 \times 10^{-8}$	$1.2 \times 10^{-6}$



**shaffer-krimmel-silver**  
& ASSOCIATES, INC. CONSULTING ENGINEERS

SOIL CLASSIFICATION AND  
ENGINEERING PROPERTIES

2900 N. Broadway • P.O. Box 2233 • Decatur, Illinois, 62526 • 217/877-2100

PROJECT: Paxton Landfill  
Chicago, Illinois

JOB NO. 18-21962-6S

CLIENT: Andrews Environmental Engineering

DATE: June 9, 1983

Sheet 2

BORING/SAMPLE NO'S.	5/11				
DEPTH/ELEVATION	50'-51.2'				
SOIL PARTICLE SIZES					
GRAVEL; %					
SAND; %	10				
coarse %	2				
medium %	4				
fine %	4				
FINES; %	90				
silt %	81				
clay (0.002 mm) %	9				
PLASTICITY CHARACTERISTICS					
MOISTURE CONTENT %	21				
LIQUID LIMIT					
PLASTIC LIMIT					
PLASTICITY INDEX	Non-plastic				
CLASSIFICATION					
USCS	ML				
USDA/AASHTO					
ENGINEERING PROPERTIES					
MAX. DRY DENSITY; pcf				RECEIVED	
OPT. MOISTURE CONTENT; %				JUN 13 1984	
CATION-EXCHANGE CAPACITY meq./100g.	9.7			E.P.A. - D.L.P.G.	
PERMEABILITY, cm/sec	$3.6 \times 10^{-7}$			STATE OF ILLINOIS	



& ASSOCIATES

CONSULTING ENGINEERS

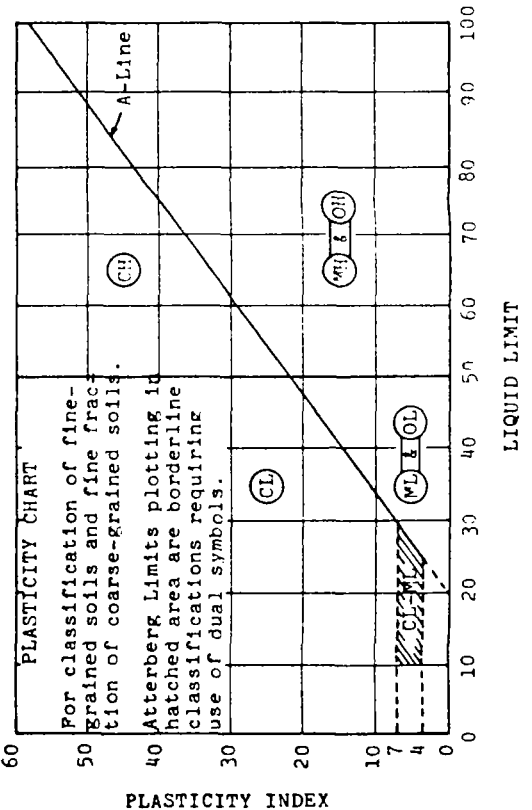
# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS	COARSE-GRAINED SOILS								FINE-GRAINED SOILS						Highly Organic Soils															
	More than 50% retained on No. 200 sieve								50% or more passes No. 200 sieve																					
	GRAVELS				SANDS				SILTS AND CLAYS			SILTS AND CLAYS																		
GROUP SYMBOLS	50% or more of coarse fraction retained on No. 4 sieve				More than 50% of coarse fraction passes No. 4 sieve				Liquid limit 50% or less			Liquid limit greater than 50%																		
	CLEAN GRAVELS		GRAVELS WITH FINES		CLEAN SANDS		SANDS WITH FINES																							
	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT															
TYPICAL NAMES	Well-graded gravels and gravel-sand mixtures, little or no fines		Poorly graded gravels and gravel-sand mixtures, little or no fines		Silty gravels, gravel-sand-silt mixtures		Clayey gravels, gravel-sand-clay mixtures		Well-graded sands and gravelly sands, little or no fines		Poorly graded sands and gravelly sands, little or no fines		Silty sands, sand-silt mixtures		Clayey sands, sand-clay mixtures		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		Organic silts and organic silty clays of low plasticity		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		Inorganic clays of high plasticity, fat clays		Organic clays of medium to high plasticity		Peat, muck and other highly organic soils	
CLASSIFICATION CRITERIA	$C_u = D_{60}/D_{10}$ Greater than 4 $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3		Not meeting both criteria for GW		Atterberg limits plot below "A" line or plasticity index less than 4		Atterberg limits plot above "A" line and plasticity index greater than 7		$C_u = D_{60}/D_{10}$ Greater than 6 $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3		Not meeting both criteria for SW		Atterberg limits plot below "A" line or plasticity index less than 4		Atterberg limits plot above "A" line and plasticity index greater than 7		PLASTICITY CHART													
CLASSIFICATION CRITERIA	Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols		For classification of fine-grained soils and fine fraction of coarse-grained soils. Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols.													
CLASSIFICATION CRITERIA	Classification on basis of percentage of fines		Less than 5% Pass No. 200 sieve GW, GP, SW, SP		More than 12% Pass No. 200 sieve GM, GC, SM, SC		5% to 12% Pass No. 200 sieve Borderline Classification requiring use of dual symbols.																							

PLASTICITY CHART

For classification of fine-grained soils and fine fraction of coarse-grained soils.

Atterberg Limits plotting in hatched area are borderline classifications requiring use of dual symbols.



INC.  
SITE

116 TH ST.

NORTH



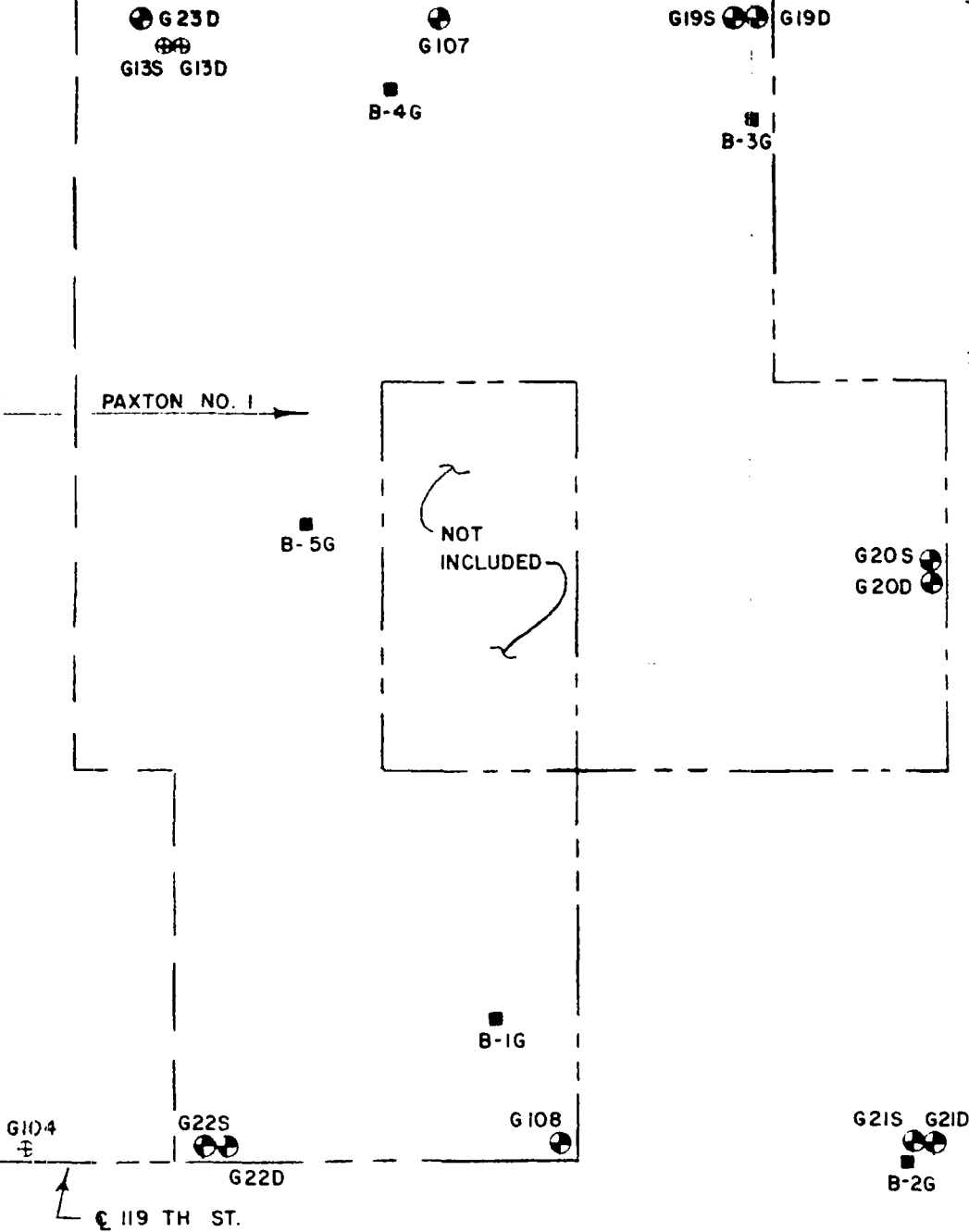
SCALE: 1" = 300'

NYC. & ST L RAILROAD  
(119 YATES AVE.)

RECEIVED

JUN 13 1984

E.P.A. - D.L.P.C.  
STATE OF ILLINOIS



PAXTON LANDFILL AS SHOWN ON THE  
DRAWINGS FOR THIS SITE PREPARED  
V. GREENGARD ASSOCIATES, INC., HIGHLAND

PAXTON LANDFILL CORPORATION  
CHICAGO, ILLINOIS

ANDREWS ENVIRONMENTAL ENGINEERING, INC.  
SPRINGFIELD, ILLINOIS

LOCATION MAP

JUNE, 1984

